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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,117	06/25/2004	Toru Takenaka	59349.00019	7901

32294   7590   09/21/2007
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EXAMINER
LOUIE, WAE LENNY

ART UNIT	PAPER NUMBER
3661	

MAIL DATE	DELIVERY MODE
09/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

		Application No.	Applicant(s)
		10/500,117	TAKENAKA ET AL.
Office Action Summary		Examiner	Art Unit	
		Wae Lenny Louie	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>25 June 2004</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>21-40</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☒ Claim(s) <u>22</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>25 June 2004</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some *   c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>6/25/04</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 22 is objected to because of the following informalities: dependent to

canceled claim 20. Examiner assumes dependency on claim 21. Appropriate

correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

Claims 21-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Takenaka et al (6,920,374) in view of Hansen (4,618,822).

Regarding applicant claims 21, 25, and 34, Takenaka et al discloses a floor

reaction force detection system of a legged mobile robot having at least a body and a

plurality of legs each connected to the body through a first joint, and each having a foot

connected to a distal end of the leg through a second joint comprising an elastic

member that contracts in response to a load and a floor reaction force calculator (Fig. 2)

and adaptive observer (col. 10, lines 23-3, "in the system to the embodiment, an

observer is used"), but is silent concerning a displacement sensor and a floor reaction

force calculator based on output of said displacement sensor.

Hansen teaches a displacement sensing device that utilizes adjustable tuned

circuit that can be applied to gaitanalysis where "systems can measure the

displacements of several targets simultaneously. They may be used for measurement

of the angle of a bent arm, ankle, leg, knee, etc." Hansen further teaches that the

displacement sensor can also be applied to robots. "The system enables dynamic

interaction between the robot and the object" (col. 15, lines 48-col 16, line 2). It would

have been obvious to one having ordinary skill in the art to include the displacement

sensor of Hansen onto the legged mobile robot of Takenaka, since the operation of a

displacement sensor is in no way dependent on the operation of the robot, and a sensor

could be used in combination with the robot to achieve the predictable results of

measuring contractions in the elastic members in response to the displacement of the

floor contacting with the robot.

Regarding applicant claims 22-23, 27-28, 40, Takenaka et al discloses the

system wherein the model as described with a first spring, a dumper arranged in series

and a second spring arranged in parallel with the first spring and dumper (col 8, line 50-

col 9, line 8, "Fig 2, a spring mechanism... piston member and elastic member).

Wherein the floor reaction force calculator estimation includes an observer that

estimates a displacement of the dumper (col. 9, lines 8-20).

Regarding applicant claim 24 and 26, Takenaka et al discloses the system

wherein the floor reaction force calculated includes at least a force component acting in

a direction of vertical axis (col. 14, lines 9-40, "vertical component").

Regarding applicant claims 29, Takenaka et al discloses the system further including: a second floor reaction force detector (col. 3, lines 7-20, "second model which expresses the floor reaction force").

Regarding applicant claims 30-33, 35 and 39, Takenaka et al discloses the system further including: a self-diagnoser that self-diagnoses where abnormality or degradation occurs in at least one of the displacement sensor and the second floor reaction force detector (col. 4, lines 23-65, "foot position/posture correcting means"). Determines whether at least one of a difference and a ratio between the floor reaction force calculated is not within a determined range (cols. 43-44, "foot-to-foot inclination estimation permissible minimum floor reaction force and foot-to-foot floor inclination estimation permissible ratio satisfy at least one of the following conditions")

Regarding applicant claims 36-38, Takenaka et al discloses the system but is silent concerning adaptive observer installed for each foot. It would have been obvious to one of ordinary skill to apply the adaptive observer to each foot since the controls are intended to determine forces related to the foot and the floor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wae Lenny Louie whose telephone number is 571-272-5195. The examiner can normally be reached on M-F 0700-1530.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on 571-272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WLL

THOMAS BLACK
SUPERVISORY PATENT EXAMINER